IN THE SPECIFICATION:

The title and headings beginning on page 1, line have been changed as follows:

~~ELECTRICAL CONNECTION OF OPTOELECTRONIC DEVICES~~

~~Background of the invention~~

~~Field of the invention~~

METHOD OF PREPARING ELECTRONICALLY CONNECTED OPTOELECTRONIC DEVICES, AND OPTOELECTRONIC DEVICES

BACKGROUND OF THE INVENTION

Field of the Invention

The paragraph beginning on page 1, line 4 has been changed as follows:

The ~~present application~~ invention is directed to a method of ~~electrical connection of~~ preparing electronically connected optoelectronic devices such as organic electroluminescent devices and organic photovoltaic devices and to electrically connected devices obtained according to this method.

On page 2 after line 7 please insert a heading as follows:

SUMMARY OF THE INVENTION

The paragraphs beginning on page 2, line 8 have been changed as follows:

The ~~present application proposes~~ invention provides a simple and efficient method for the preparation of a number of electrically connected optoelectronic devices on a single substrate. The method allows access to a range of applications including a plurality of series connected organic electroluminescent devices on a single substrate which can be driven at higher voltages than a single organic electroluminescent device, to arrangements of organic

electroluminescent devices on a single substrate which can be driven to provide continuous light emission using an AC power source, to a plurality of series connected organic photovoltaic devices on a single substrate providing a higher output voltage and so enabling more practical applications and to a plurality of organic electroluminescent devices and organic photovoltaic devices on a single substrate. The method of the present invention obviates the need for external electrical connections between devices, simplifying processing and enabling a number of electrically connected devices to be encapsulated in a single, hermetically sealed package.

~~Summary of the Invention~~

In a first embodiment the ~~present~~ invention provides a method of preparing a plurality of electrically connected organic optoelectronic devices on a substrate ~~said~~ <u>the</u> method

~~comprising~~ <u>including</u> the steps of:

a) preparing a plurality of organic optoelectronic devices comprising;

i) providing a substrate,

ii) providing a patterned layer of a first conductive material over said substrate,

iii) providing <u>a</u> layer of organic optoelectronic material over said layer of first conductive material and

iv) providing a patterned layer of a second conductive material over said layer of organic optoelectronic material, said patterned layer of second conductive material covering regions of said layer of organic optoelectronic material, said patterned layer of a second conductive material defining a plurality of optoelectronic devices,

b) at least partially removing regions of said organic optoelectronic material which are not covered by said patterned layer of second conductive material, <u>and</u>

~~characterised in that said method further comprises the step of~~

c) providing electrical connections to electrically connect at least two of said plurality of organic optoelectronic devices.

Organic optoelectronic devices which may be prepared by the ~~present~~ invention include organic diodes such as organic electroluminescent devices and organic photovoltaic devices and also organic transistors, organic photoluminescent devices, organic phosphorescent devices, organic resistors and organic capacitors. Organic electroluminescent devices and organic photovoltaic devices are preferred classes of organic optoelectronic devices. The substrate is preferably a single, unitary substrate at the time of carrying out the method according to the invention. The substrate may have a composite structure, for example, comprising layers of glass and plastic, plastic and ceramic or ceramic and metal.

The paragraph beginning on page 4, line 14 has been changed as follows:

In a preferred embodiment ~~said~~ <u>the</u> second conductive material partially overlies said first conductive material, such an arrangement enables electrical connections to be more

readily made between neighbouring devices. Where the second conductive material only partially overlies the first conductive material removal of the organic optoelectronic material not covered by the second conductive material uncovers regions of the first conductive material. The removal of organic optoelectronic material from regions of the first conductive material enables electrical connection to be made between the first and second conductive materials of different organic optoelectronic devices in an efficient manner simply by depositing the connecting material such that it overlies the second conductive material of a first device and the first conductive material of a second device.

The paragraphs beginning on page 5, line 8 have been changed as follows:

In a preferred embodiment said method further ~~comprises~~ includes the step of providing a layer of hole injecting or hole transporting material over said patterned layer of first conductive material.

In a further embodiment ~~said~~ the substrate ~~comprises~~ may be a plastic substrate. Suitable plastics include acrylic resins, polycarbonate resins, polyester resins, polyethylene terephthalate resins and cyclic olefin resins.

The ~~present~~ invention is also directed to organic optoelectronic devices prepared according to the above method, in particular the ~~present~~ invention is directed to a plurality of electrically connected organic optoelectronic devices on a substrate obtainable according to the method of the ~~present~~ invention. Preferred optoelectronic devices include organic photovoltaic devices and organic electroluminescent devices.

In a further embodiment the ~~present~~ invention is directed to a substrate comprising both organic photovoltaic devices and organic electroluminescent devices.

~~Detailed description of the invention~~

~~Brief description of the drawings~~

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a method of preparation of electrically connected organic optoelectronic devices according to the ~~present~~ invention.

The paragraph beginning on page 6, line 3 has been changed as follows:

Figure 3 shows a method of preparing a device on a single substrate ~~comprising~~ includes a combination of organic electroluminescent devices and organic photovoltaic devices.

The paragraphs beginning on page 6, line 7 have been changed as follows:

Figure 5 shows a d.c. voltage converter ~~comprising~~ including a large array of series connected organic photovoltaic devices on a single substrate and a light emitting polymer device.

~~Description of the preferred embodiments~~

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The paragraphs beginning on page 13, line 8 have been changed as follows:

In a particularly advantageous application of the method of the ~~present~~ invention the substrate comprises a flexible, impervious plastic material such as an acrylic resin, a polycarbonate resin, a polyester resin, a polyethylene terephthalate resin or a cyclic olefin

resin, or a laminate comprising a plastic resin and an impervious inorganic material. A device on a plastic substrate may be prepared in a so-called roll-to-roll or web process whereby the organic materials are deposited by solution deposition techniques such as printing or spraying. The ~~present~~ inventive method has the advantage that, where suitable materials are selected, the electrical connectors can be deposited by the aforementioned solution processing techniques.

The method of the ~~present~~ invention allows access to a variety of arrangements of electrically connected organic optoelectronic devices which hitherto could only be obtained using complex multistep techniques or through the integration of a number of separate units. The following describes a number of arrangements of organic optoelectronic devices which are made readily accessible by the method of the present invention.

The paragraph beginning on page 15, line 3 has been changed as follows:

The method of the ~~present~~ invention may be used to provide substrates comprising electrically connected organic photovoltaic devices and organic electroluminescent devices. The advantages of such an arrangement are that the organic photovoltaic devices may be used to drive the organic electroluminescent devices so providing a source of illumination or an information display which requires neither a connection to a grid power supply nor a power source such as a battery. Figure 3a) shows a substrate 301 comprising a patterned layer of ITO 302 acting as an anode, the anode is patterned to define four organic photovoltaic devices around the edges of the substrate and an organic electroluminescent device at the centre of the substrate. A layer of hole transporting PEDOT:PSS is deposited over the ITO by spin-coating (not shown). A layer comprising a blend of poly(3-hexylthiophene) and poly(2,7-(9,9-di-n-octylfluorene)-(4,7-di-2-thienyl-(benzothiazole)) is then spin-coated over

the layer of PEDOT:PSS (not shown). Following deposition of the organic layers the device cathodes are deposited. The cathodes comprise a layer of aluminum of thickness 300nm and are deposited by vapour deposition through a shadow mask. Figure 3b) shows the shape of the cathodes 303 of the organic photovoltaic devices which are deposited through the shadow mask. The exposed organic material is then removed by plasma etching and the organic photovoltaic devices are electrically connected using connectors 304 having the shape shown in Figure 3c). In order to prepare the organic electroluminescent device a layer of PEDOT:PSS is deposited by spin-coating over the substrate. A layer of the organic electroluminescent polymer poly(9,9-di-n-octylfluorene) is then spin-coated over the layer of PEDOT:PSS. A cathode comprising a 5nm layer of LiF, a 10nm layer of Ca and a 100nm layer of Al is deposited over through a shadow mask. Figure 3d) shows the shape of the cathode 305 of the organic electroluminescent device. Exposed organic material is then removed by plasma etching leaving the layer of PEDOT:PSS and the layer of poly(9,9-di-n-octylfluorene) beneath the cathode. The organic electroluminescent device is then connected to the organic photovoltaic devices by means of a connector 306 shown in Figure 3e).